

Remarks

Protest of Examiner's Final Decision on Combination of Claims of Groups I and II. The Applicant acknowledges, under protest, the Examiner's rejection of the Applicant's argument to traverse the proposed restrictions of the claims of Group I and Group II as provided in Paper No. 5. The Applicant contends that the Examiner appears to have overlooked the Applicant's arguments to traverse based on technicalities in the MPEP and that the Examiner's decision may have failed to fairly and adequately consider the Applicants' disclosures and stated intent that the Claims of Group II are merely variants of the same invention as per the claims of Group I. The Examiner's decision places an undue and unfair burden on the Applicant, an independent inventor and small business, by requiring the submission and administration of numerous divisional applications and the consequential accumulation of the associated additional filing fees, maintenance fees and other direct costs.

Confirmation of Election of Claims of Group I. The Applicant hereby confirms the election of the claims of Group I, namely claims 1-18, 21-34, 37 and 38. The Applicant hereby withdraws from consideration and cancels the claims of Group II, namely Claims 19, 20, 35 and 36. The Applicant reserves the right to file additional divisional applications in due course.

*Did not address  
cancellation of  
claims 39-47*

Claims 14, 31, and 37-38. In response to the Examiner's rejections of claims 14, 31, and 37-38 under 35 U.S.C 112 as being indefinite, the Applicant has amended these claims herein so as to properly define the subject matter of the present invention. Specifically, claims 14 and 31 have been amended so as to include properly defined Markush groups that are consistent with the disclosures provided in the Applicant's specification. Claim 37 has been amended to omit the alternate dependence on claims 19 and 20, which are hereby withdrawn

from consideration and canceled. Claim 38 has been amended to omit reference to claims 35 and 36, which are hereby withdrawn from consideration and canceled.

35 U.S.C. 102(b) Rejections of Claims 1-2, 4, 13-14 and 37-38. In response to the Examiner's rejections of claims 1-2, 4, 13-14 and 37-38 as being anticipated by and unpatentable over Gago (USP 4,470,839) under 35 U.S.C 102(b), the Applicant disagrees with the Examiner for the reasons stated below.

First, the Applicant has rewritten Claim 1, amended herein, to more clearly define the subject matter of the present invention so as to more clearly distinguish the subject matter of the present invention from the prior art.

The Examiner opines that claims 1-2, 4, 13-14 and 37-38 of the present invention would be "clearly anticipated by Gago" and then states that Gago teaches "solid particles containing calcium peroxides and hexametaphosphate, sodium carbonate buffer, and acid hydrogen peroxide." The Examiner cites example 1 and claims 1-4 from Gago as anticipating the present invention. The Applicant disagrees, and contends that Gago does not disclose the present invention and is at most an incomplete and misleading disclosure relative to the present invention. First, the Applicant points out that unlike Gago's "coated particles," the simplest preferred embodiments of the Applicant's composition are dry mixtures of discrete *newly added* particles of solid-chemical ingredients that include neither hydrogen peroxide or sodium carbonate. *include Na<sub>2</sub>CO<sub>3</sub>*

Second, the present invention avoids the use of aqueous solutions containing hydrogen peroxide or sodium carbonate, or any other aqueous solutions for that matter, for the preparation of the Applicant's composition. An important difference between the Applicant's Amendment A, Ser. No. 09/722,878

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composition and that of Gago is that it is very important to keep all materials and equipment dry in the preparation of the composition of the present invention. The addition of aqueous solutions according to Gago would be disadvantageous and potentially even dangerous with respect to the compositions prepared in accordance with the Applicant's invention. The addition of such aqueous solutions to the Applicant's composition would trigger the release of oxygen from the active-oxygen component, and could also cause the composition to react with its surroundings. This would lead to the release of oxygen and other gases that could pose material handling, storage and safety problems with respect to the Applicant's composition and the means for its preparation as disclosed in the present invention. Moreover, the addition of aqueous solutions to the Applicant's composition in accordance with the present invention would result in a loss of oxygen content and potency, adversely affecting the shelf life and effectiveness of the composition. Hence, based on these differences alone, it is clear that the subject matter of the present invention could not be anticipated by Gago and should not be rejected under 35 U.S.C. 102.

A fundamental distinction between Gago and the present invention is that Gago discloses "coated particles" of calcium peroxide and means for their preparation and use (and the stated advantages thereof), whereas the present invention consists of a mixture of discrete, i.e., uncoated, particles of a source of (a) active oxygen and (b) complex phosphates. Column 2, lines 17-20 of Gago states: "[t]he present invention [USP 4,470,839] relates to solid particles containing a metal peroxide, which are coated by means of a coating agent containing a water-soluble condensed phosphate" (emphasis added). Gago's further disclosures concerning his "coated particles" are exhaustive and detailed, and references to the said "coated particles" are made repeatedly throughout his specification, examples and claims. Taken in its entirety, the sum and substance of the patent to Gago is to teach not merely the formulation of a generic composition and the advantages thereof but more

specifically to teach these "coated particles" and means for their preparation and use in a non-analogous field (agriculture, horticulture and silviculture) relative to that of the present invention (environmental remediation).

Based on the information presented above, the Applicant reiterates that the present invention would not be anticipated by Gago, as Gago would clearly be misleading to one of ordinary skill in the art. This point is well illustrated by example 1 in Gago's disclosure, which is cited by the Examiner in the 35 U.S.C 102(b) rejection of the present invention. Gago's example 1 discloses means for the preparation of his "coated particles" via a fluidized-bed agglomeration process. Gago's process involves the treatment and agglomeration of calcium peroxide particles, (which is obtained by reacting lime containing 80%  $\text{CaO}_2$  with hydrogen peroxide), with aqueous liquid solutions, which after separation and drying, produce Gago's coated particles. Specifically, Gago discloses the use of aqueous solutions containing 3% (by weight) sodium hexametaphosphate, 2.5% sodium carbonate buffer and 0.32% hydrogen peroxide. By comparison, the preferred embodiments of the Applicant's composition, which include neither sodium carbonate or hydrogen peroxide solutions, are made via a much simpler means which involves the dry mixing and direct compaction of discrete particles of the component solid-chemical ingredients. In comparison to the relatively simple means of producing the Applicant's composition (as disclosed by means of the inventor's specification and examples), Gago's process is not only different and more complicated, but it limits the scope of Gago's invention to materials, formulations and product forms that are compatible with and can be prepared by a fluidized-bed agglomeration process that involves aqueous-treatment solutions.

Gago's disclosures concerning dry mixing and direct compaction (Col. 4, Lines 11-29) are not merely incomplete, but incorrect as they would not yield Gago's invention, i.e., the "coated

particles." Noteworthy is that Gago's disclosure contains the limiting language "[i]f the particles of the invention are presented in the form of agglomerates..." (Col 4., Lines 15-16), which in the context of Gago's invention, implies that the particles to be compacted had already been agglomerated beforehand. Certainly, given Gago's consistent emphasis on these "coated particles," it is highly unlikely that a person of ordinary skill in the art would take the disclosures in Col. 4, Lines 11-29 out of the context of Gago's entire invention to simply arrive at the present invention. The remainder of Gago's patent, including the earlier portions of the specification and the later portion of the specification from Col. 4, Line 30 through the examples and appended claims, provides detailed disclosures concerning Gago's "coated particles." Taken as a whole, the patent to Gago is a misleading and incorrect disclosure from which a person of ordinary skill in the art would not arrive at the Applicant's invention.

Another important distinction between Gago's composition and the Applicant's invention is that the "condensed phosphates" in Gago's composition are specifically limited to the role of a "coating agent." Noteworthy is that Gago also uses the term "coating agent" in the aforementioned disclosures discussed above (Col 4, Line 18). In Gago's invention, his "coated particles" are limited to and described as a means of providing a slow and continuous release of oxygen. Gago makes no disclosures concerning his "coated particles" as providing for a sustained release of complex phosphates, such as in the Applicant's invention. The Applicant's invention is clearly different in that the subject composition is intended to provide for "a sustained-release of active oxygen and complex inorganic phosphates" (Claim 1, emphasis added).

In conclusion, the Applicant submits that the information provided above clearly traverses the Examiner's rejections under 35 U.S.C 102(b) as it demonstrates that the subject matter of the present invention could not be anticipated by Gago.

Examiner's Remark Concerning "Joint Inventors." At the bottom of Page 3 of the Examiner's office letter dated 4 October 2002 (Paper No. 6), the Examiner states that "[t]his application currently names joint inventors" and goes on to state matters that would need to be addressed by the Applicant. The Applicant is confused by the Examiner's comments, as Eric C. Hince is the sole named inventor on the current application. The applicant hereby reiterates that Mr. Hince is the sole inventor on the subject application and that the Examiner's comments regarding joint inventors must be erroneous.

35 U.S.C. 103(a) Rejections of Claims 1-4, 7-8, 13-14, 17-18 and 37-38. In response to the Examiner's rejections of claims 1-4, 7-8, 13-14, 17-18 and 37-38 as being obvious from and unpatentable over Gago (USP 4,470,839) under 35 U.S.C 103(a), the Applicant disagrees with the Examiner for the following reasons. First, the Applicant contends that Gago teaches away from the present invention for the reasons explained below. Second, the Applicant also contends that the present invention teaches new art that is neither disclosed by or obvious from Gago. Third, the Applicant submits that the field of art (i.e., agriculture, horticulture and silviculture) and intended uses (e.g., oxygenation of wet / anaerobic soils to stimulate plant growth) of Gago's "coated particles" are different and non-analogous to the field of art (environmental remediation) and intended uses (e.g., treatment of contaminated geologic media) of the Applicant's invention. As Gago is non-analogous art relative to the field of the Applicant's invention, it would not be obvious to one of ordinary skill in the field art of the present invention to consult Gago, let alone to derive the present invention from Gago.

The present invention consists of a dry mixture of discrete, i.e., uncoated, particles of a source of (a) active oxygen and (b) complex phosphates, which is fundamentally different from Gago's "coated particles" and means for their preparation. Column 2, lines 17-20 of Gago states: "[t]he present invention [USP 4,470,839] relates to solid particles containing a metal peroxide, which are coated by means of a coating agent containing a water-soluble condensed phosphate" (emphasis added). Gago makes detailed disclosures concerning his "coated particles," with references to these "coated particles" made repeatedly throughout his specification, examples and claims. Taken in its entirety, the sum and substance of the patent to Gago is to teach his "coated particles" and means for their preparation and use, which essentially teaches away from the present invention. By contrast, the present invention teaches the formulation, preparation and use of solid-chemical compositions comprised of dry mixtures of discrete particles, preferably prepared in the form of granules, briquettes and the like (as per the Applicant's Examples 1-3, Claims 37-38), whereby the properties of the preferred formulations as well as the form of the inventor's composition provide for a robust and sustained release of both active oxygen and complex phosphates. The present invention and the advantages thereof are clearly different and unobvious from Gago.

An important difference between the Applicant's composition and that of Gago is that it is very important to keep all materials and equipment dry in the preparation of the composition of the present invention. Gago's example 1 discloses means for the preparation of his "coated particles" via a fluidized-bed agglomeration process that involves the treatment and agglomeration of calcium peroxide particles with aqueous liquid solutions, which after separation and drying, produce Gago's coated particles. By comparison, the preferred embodiments of the Applicant's composition (which include neither sodium carbonate or hydrogen peroxide solutions) are made via a much simpler means which involves the dry mixing and direct compaction of discrete particles of the component ingredients.

Taken out of the entire context of Gago's invention, Gago's disclosures concerning dry mixing and direct compaction (Col. 4, Lines 11-29) would be incorrect and misleading, as they would not yield Gago's invention, i.e., the "coated particles." Given the aforementioned limiting language in Gago's disclosure (Col 4., Lines 15-16), a person of ordinary skill in the art of the present invention would more likely conclude that in the context of Gago's invention, the particles to be compacted were agglomerated beforehand. Certainly, given Gago's consistent emphasis on his "coated particles," it is highly unlikely that a person of ordinary skill in the field of art of the present invention (environmental remediation), would consult Gago from a different field of art (agriculture, horticulture and silviculture) and take Gago's disclosures from Col. 4, Lines 11-29 out of the context of Gago's "coated particles" invention to somehow arrive at the present invention. Hence, the sum and substance of Gago's disclosures concerning his "coated particles" is to teach away from the present invention.

The use of aqueous solutions and the fluidized-bed agglomeration process disclosed by Gago would be disadvantageous and potentially even dangerous with respect to the compositions prepared in accordance with the Applicant's invention. The preferred forms of the inventor's composition are dry mixtures from which granules, briquettes, tablets and like forms are produced by roll compaction or direct compression. As part of the Applicant's research that led to the present invention, the inventor evaluated several different manufacturing process options and ultimately selected roll compaction as the preferred means for the dry handling and production of the subject composition of the present invention. For example, each of the granular forms of the inventor's composition described in the Applicant's Examples 1-3 were made by first dry mixing the ingredients and then compacting the composition in a Fitzpatrick Model IR-520 roll compactor and with milling and screening systems operated so as to produce granules in the 2-8 mesh sieve-size range. The addition of aqueous solutions as in Gago to the Applicant's composition at any stage of the Amendment A, Ser. No. 09/722,878

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manufacturing process of the inventor's composition would trigger the release of oxygen from the active-oxygen component (e.g., calcium peroxide), and could also cause the composition to react with its surroundings. This would lead to the release of oxygen and other gases that could pose material handling, storage and safety problems with respect to the Applicant's composition and the means for its preparation as disclosed in the present invention. At best, the introduction of aqueous solutions at one or more stages of the production of the inventor's composition would necessitate an additional (and expensive) drying step in the manufacturing process. Moreover, the addition of aqueous solutions to the Applicant's composition in accordance with the present invention would result in a loss of oxygen content and potency, adversely affecting the shelf life and effectiveness of the composition. Accordingly, the Applicant has and continues to take great care to protect the subject composition (and its components) from moisture from the initial stages of material storage and handling, through manufacturing and ultimately up to the point and time of actual use.

Based on the foregoing, Gago not only teaches a different and more complicated process for making his "coated particles," but his process limits the scope of his invention to materials, formulations and product forms that are compatible with and can be prepared by a fluidized-bed agglomeration process that involves aqueous-treatment solutions. In comparison to Gago, the Applicant's composition, i.e., a dry mixture of discrete particles, provides the advantages of being simpler to produce and enabling a broader range of chemical formulations. The flexibility of the composition of the present invention is illustrated by the potential inclusion of various secondary components described in the Applicant's specification and dependent claims. Most of these secondary components, such as nitrates (e.g., Applicant's Claims 5-6 and 23-24), and the attendant advantages thereof in the present invention, are not disclosed in Gago.

The foregoing illustrates several fundamental differences between Gago and the present invention, and also shows how Gago's specific and detailed disclosures concerning his "coated particles" invention teach away from the present invention.

The Applicant also submits that the present invention teaches new art that is neither disclosed by or obvious from Gago or the other prior-art references cited by the Examiner. The Applicant notes that in Gago, the use of "condensed phosphates" is specifically limited to the role of a "coating agent" for Gago's "coated particles." In Gago's invention, his "coated particles" are limited to and described as a means of providing a slow and continuous release of oxygen. Gago makes no disclosures concerning his "coated particles" as providing for a sustained release of complex phosphates, such as in the Applicant's invention. Hence, the Applicant's invention is clearly different in that the subject composition is intended to provide for "a sustained-release of active oxygen and complex inorganic phosphates" (Claim 1, emphasis added).

Concerning the importance and function of complex phosphates in the subject matter of the present invention, the Applicant calls attention to the inventor's specification and examples which disclose new information and/or discoveries not addressed by Gago or elsewhere in the prior art cited by the Examiner. The new art taught by the Applicant concerning the use of complex phosphates in the subject composition of the present invention includes:

1. The sustained release of the complex phosphates (as well as the oxygen) from the subject composition as an intended function and advantage of the composition for its intended uses;
2. the role of the complex phosphates as being advantageous forms of nutrient phosphorus, as the complex phosphates are less reactive geochemically than simple phosphates. These complex phosphates are also biologically

hydrolyzable, i.e., they require a microbial enzyme to break the bonds between the phosphate molecules in order to be able to use the individual phosphate molecules. Hence, an intended role of the complex phosphates in the present invention is to provide a more efficient and targeted source of nutrient phosphorus to microorganisms; and

3. the unexpected and unanticipated beneficial chemical function of the complex phosphates in which they appear to prevent or otherwise minimize the formation of precipitates and coatings on the inventor's composition (e.g., in the preferred forms of granules, briquettes and the like) that would otherwise tend to trap or "lock in" the oxygen content associated with the source of active oxygen.

Gago makes no such disclosures concerning the aforementioned roles and advantages of the use of complex phosphates in the Applicant's invention (which are described in further detail in the inventor's specification). The discoveries and advantages of the Applicant's invention summarized above would not be obvious from Gago or the other art cited by the Examiner (or any other art reference for that matter) in the absence of the research and empirical testing conducted by the inventor.

Another advantage of the preferred granule, briquette, pellet, capsule, or tablet forms of the inventor's composition is that they provide additional means of varying the release-rate profiles of the sources of active-oxygen and complex phosphates. Specifically, the rate at which the preferred forms of the inventor's composition disintegrate subsequent to their application and/or upon contact with water can be varied via the addition of a disintegrant (Page 16, Lines 9-32 of the inventor's application). Relatively minor variations in the amount of disintegrant used in the composition can have significant effects on the rate of disintegration of the preferred forms of the composition. For example, by incorporating

pre-gelled starch in the granular form of the inventor's composition in amounts from 2% to 4% by weight, the granules rapidly and completely disintegrated within several minutes after their application to water, whereas granules with 1% pre-gelled starch disintegrated relatively slowly and remained partially intact for more than 4 weeks (Page 16, Lines 22-32; Examples 1-2). Without the pre-gelled starch disintegrant altogether, the inventor's granules remained largely intact more than 4 weeks after application to water. This improved functionality enables the time-dependent release profile(s) of the "active" ingredients to be varied so as to optimize the remediation of contaminants based on site-specific factors or factors pertaining to the specific waste-stream, media and/or the contaminants therein. Neither Gago or the other prior art references cited by the Examiner teach this aspect of the present invention, nor would this advantage of the present invention be obvious from these references.

The Applicant's invention is also distinguishable from Gago and the other prior art cited by the examiner by a number of unexpected and unanticipated results discovered by empirical testing of the composition in ground-water remediation field trials (e.g., inventor's application Page 17, Line 6-11; Examples 2-3; Claims 37-38). In particular, these unanticipated results and advantages of the present invention concern the relatively coarse and long-lasting granular forms of the composition. A most unexpected finding was that the longer lasting granular forms of the inventor's composition (e.g., Example 3) provided for a greater release of oxygen over a longer period of time than was expected relative to the quick-disintegrating forms of what was otherwise mostly the same composition (e.g., Example 1). Noteworthy is that the field trial described in the Applicant's Example 3 was ongoing at the time the subject application was filed. The results of the trial described in Example 3 ultimately showed that the inventor's "4" and "5" series compositions continued to release high levels of dissolved oxygen ( $\geq 13$ -20 mg/L) for more than 250 days. This result was most unexpected, as the consensus of expert opinions gathered by the inventor during the time when the invention was

being developed was that the higher total surface area of the fine-powdered forms of other oxygen-release materials (including other calcium- and magnesium-peroxide containing products and presumably the inventor's composition as well) would result in a greater release of oxygen. These unexpected and unanticipated results support the Applicant's argument that the present invention would not be obvious from Gago alone or in combination with the other prior art references cited by the Examiner.

These unexpected and beneficial results of the present invention have lead the inventor to propose the following working hypotheses as the basis for these findings:

- i. the intrinsic permeability of the larger granules enables oxygen to escape and prevents or minimizes the oxygen "lock-up" associated with the solidified, concrete-like mass that tends to form from the application of other active-oxygen compositions that are comprised of smaller particles in a powdered form;
- ii. the complex phosphates present within the matrix of the composition provide porous channels for the release of oxygen as they are solubilized and released from the composition
- iii. the complex phosphates appear to block the formation of scales and precipitates on the particle surfaces of the inventor's composition, further providing for the enhanced release of oxygen.

In short, it is the inventor's opinion that the combined functionality of the formulation and coarse granular form of the subject composition of the present invention serve to sustain and control the activation and release of oxygen, thereby providing improved oxygen-release characteristics for a wide variety of end uses and applications. Neither Gago or the other prior art references cited by the Examiner, alone or in combination, teach the aforementioned

advantages of the present invention, nor would such advantages be obvious from these references.

The slow-disintegrating variants of the preferred forms of the inventor's composition are particularly well suited for environmental remediation applications such as the use of the composition in permeable reactive barrier (PRBs) for treatment of ground water, leachate seeps, and similar discharges of acid-mine drainage (Page 16, Line 33 - Page 17, Line 5). In such "PRB" applications, the inventor's granules provide a "reactive" treatment zone of higher permeability relative to the surrounding materials to enhance flow of contaminated fluids through the granular composition, thereby improving treatment. Neither Gago or the other prior art references cited by the Examiner, alone or in combination, teach this advantage of the present invention, nor would it be obvious from these references.

Another benefit of the long-lasting granular forms of the inventor's composition is that they are easier to use in environmental-remediation applications in which the composition is used in application devices such as filter socks, canisters, and cartridges. Prior to development of the present invention, numerous persons in the remediation field informed the inventor that filter socks containing "a 'leading' slow-release oxygen product" sold on the market had a tendency to swell considerably and become stuck inside the wells in which they were installed. As described in the Applicant's specification and Example 3, when applied within filter socks, the long-lasting granular forms of the inventor's composition were observed to retain their shape and porosity, which prevented the filter socks from swelling and becoming stuck in the treatment wells. This is an important and significant advantage of the present invention, particularly with respect to ground-water remediation applications, relative to the prior art. Beyond the observation that these granular variants of the inventor's composition hold their shape for long periods of time, another possible explanation for this benefit of the present

invention is that there is sufficient "sacrificial" internal void space within the granules that prevents the composition from swelling and causing the application device to become stuck. Hence, this aspect of the present invention provides clear advantages over the prior art for environmental remediation applications in which the composition is applied within application devices that are installed within wells, boreholes, pipes, manholes and the like. These advantages of the present invention would not be obvious from Gago or the other prior art references cited by the Examiner, alone or in combination.

In view of the information presented above, the Applicant submits that the subject claims of the present invention would not be obvious from Gago, as Gago clearly teaches away from the present invention. Moreover, the field of art and intended uses of Gago's "coated particles" are different and non-analogous to the field of art and intended uses of the present invention. Most importantly, the Applicant submits that the present invention teaches new discoveries and advantages of the subject compositions in its intended field of use that are neither disclosed by or obvious from the prior art cited by the Examiner.

In conclusion, the Applicant submits that the information provided above clearly traverses the Examiner's rejections of the subject claims of the present invention under 35 U.S.C 103(a).

35 U.S.C. 103(a) Rejections of Claims 5, 11-12, and 15-16. In response to the Examiner's rejections of claims 5, 11-12, and 15-16 as being obvious from and unpatentable over Gago (USP 4,470,839) in view of Felix et al. (USP 5,725,885) under 35 U.S.C 103(a), the Applicant disagrees with the Examiner for the following reasons. First, the Applicant hereby reiterates the arguments to traverse the Examiner's 35 U.S.C 103(a) rejections of claims 1-4, 7-8, 13-14, 17-18 and 37-38 presented above. Second, there is no suggestion in the art references of either Gago or Felix et al., as cited by the Examiner, to combine the references so as to derive

the present invention. Third, given that Gago is non-analogous art relative to the field of the present invention, it would not be expected that a person of ordinary skill in the Applicant's field of art would seek to combine the references of Gago and Felix et al. to derive the present invention. Fourth, in the allowance of Claim 1 for the numerous reasons described above by the Applicant, the Examiner's rejections of Claims 5, 11-12 and 15-16 would be rendered moot.

Like the present invention, the patent to Felix et al. discloses a composition and means for its manufacture and use that pertain to the field of environmental bioremediation. Though Felix (USP 5,725,885) is in the field of the present invention, and therefore non-analogous to the field of Gago, Felix et al., like Gago, teaches away from the present invention in that they make numerous and detailed disclosures concerning a coated composition. Felix et al. teaches a coated composition in which an "encapsulation coating" comprised of lipophilic materials such as oleic acid, stearic acid and palmitic acid is sprayed onto a "core of microbial available nutrients." Given that (a) both Gago and Felix et al. teach away from the present invention by disclosing coated compositions, and (b) these references are from non-analogous fields, it is therefore extremely unlikely that a person of ordinary skill in the field of the present invention would seek to combine these references so as to derive the uncoated composition of the present invention.

In view of the information presented above, the Applicant submits that the subject claims of the present invention are not obvious from either Gago or Felix et al., nor would it be obvious to one skilled in the art of the present invention to combine these references to derive the subject matter of the present invention. Further, the present invention teaches new matter that is neither disclosed by or obvious from the references as cited by the Examiner, either alone or in combination. In conclusion, the Applicant submits that the information provided above

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clearly traverses the Examiner's rejections of the subject claims of the present invention under 35 U.S.C 103(a).

35 U.S.C. 103(a) Rejections of Claims 6, 9-10, and 21-34. In response to the Examiner's rejections of claims 6, 9-10, and 21-34 as being obvious from and unpatentable over Gago (USP 4,470,839) in view of Felix (USP 5,725,885) and further in view of Fusey (USP 3,796,637) and Gaffar et al. (5,648,064) under 35 U.S.C 103(a), the Applicant disagrees with the Examiner for the following reasons. First, the Applicant hereby reiterates the arguments to traverse the Examiner's 35 U.S.C 103(a) rejections of (i) claims 1-4, 7-8, 13-14, 17-18 and 37-38 and (ii) 5, 11-12, and 15-16 presented above. Second, there is no suggestion in either Gago or Felix et al. to combine these references so as to derive the present invention, nor are there suggestions in either Fusey or Gaffar et al. to combine these references with either one another let alone with both Gago and Felix et al. Third, given that Gago and Gaffar et al. are non-analogous art relative to the field of the present invention, it would not be expected that a person of ordinary skill in the Applicant's field of art would seek to consult let alone combine these references with either Felix et al., Fusey or both so as to somehow arrive at the present invention. Fourth, in the allowance of Claim 1 for the numerous reasons described above by the Applicant, the Examiner's rejections of Claims 6, 9-10, and 21-34 would be rendered moot.

Like Gago, the patent to Gaffar et al. is non-analogous art relative to the present invention. Gaffar et al. disclose a "two component whitening dentrifice composition" that incorporates a "manganese coordination complex" to activate the peroxygen compound which "accelerates the release of active oxygen" (see abstract of Gaffar et al., emphasis added). Hence, Gaffar et al. teaches away from the present invention, as the present invention provides means for the slow and sustained release of active oxygen and complex phosphates. Furthermore, there

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is no suggestion in Gaffar et al. to combine the art disclosed therein with the art of Gago, Felix et al. or Fusey.

Like the present invention and that of Felix et al., the patent to Fusey discloses compositions and means for its manufacture and use that pertain to the field of environmental bioremediation. Gago makes no disclosures concerning the use of an inorganic source of nitrogen. With respect to the subject matter of the present invention, e.g., Claim 6, both Felix et al. and Fusey teach away from the present invention by disclosing the use of ammonium-containing compounds as sources of nutrient nitrogen. In the preferred forms of the present invention, the source of inorganic nitrogen is ammonium-free and is selected from sodium nitrate, sodium-potassium nitrate, potassium nitrate and other nitrates (see Page 12, Line 23-Page 13, Line 2). As disclosed by the Applicant, such ammonium-free sources of inorganic nitrogen are preferred so as to promote biologically mediated denitrification processes which can enhance and compliment the oxygen-based processes facilitated by the simplest preferred embodiment of the composition, i.e., the composition of Claim 1. None of the prior art references make any disclosures pertaining to the use of denitrification-based chemistry or bioremediation processes. Similarly, none of the prior art references cited by the Examiner disclose the preferred use of such ammonium-free sources of nitrogen nor do they disclose the combination of ammonium-free sources of nitrogen with a solid-chemical source of active oxygen and complex phosphates, as in the present invention. Moreover, as described in the inventor's specification, although denitrification is an anaerobic process, it can also occur in oxygen-rich environments, such that the ammonium-free nitrogen component of the composition of Claim 6 provides a distinct and non-obvious advantage of the present invention over the prior art, let alone from the extremely unlikely combination of the references cited by the Examiner. Hence, it would not be obvious to a person of ordinary skill in the field

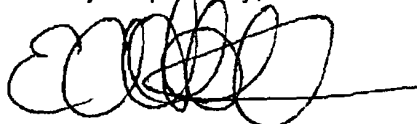
of the present invention to combine these references with either Gago or Gaffar so as to derive the subject matter of the present invention.

In view of the information presented above, the Applicant submits that the subject claims of the present invention are not obvious from Gago, Felix et al , Fusey or Gaffar et al., alone or in combination. Given the fact that Gago and Gaffar et al. are non-analogous art and that each of the references cited by the Examiner teach away from the present invention, it would not be obvious to a person of ordinary skill in the art of the present invention to combine these references to derive the subject matter of the present invention. Further, the present invention teaches new matter not disclosed in or obvious from the prior art references cited by the Examiner, alone or in combination. In conclusion, the Applicant submits that the information provided above clearly traverses the Examiner's rejections of the subject claims of the present invention under 35 U.S.C 103(a).

**Conditional Request for Constructive Assistance**

It is the Applicant's belief that this Preliminary Amendment provides a complete response to the Examiner's Office Action mailed 4 October 2002. It is also the Applicant's belief that the subject matter of the present invention is novel and unobvious. The Applicant also submits that the claims of Group I, as amended herein, define the subject matter of the present invention in a manner that is proper, definite and distinguishable over the prior art. If, for any reason, this response is not deemed complete or this application is not believed to be in full condition for allowance, the Applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to MPEP § 2173.02 and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,

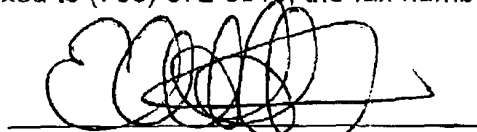


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**Certificate of Facsimile:** I certify that on the date below, this document and referenced attachments, if any, have been faxed to (703) 872-9310, the fax number provided by the Examiner.

4 February 2003



Eric Christian Hince, Applicant